

What is claimed is:

1. A method of communicatively coupling power line communication (PLC) devices to a first and a second overhead power line conductor that travel in a substantially parallel physical arrangement and in a spaced-apart relation, the method comprising:

coupling a first PLC device to the first power line conductor at a first location;

coupling a second PLC device to the first power line conductor at a second location for communication with said first PLC device, at least in part, via the first power line conductor;

coupling a third PLC device to the second power line conductor at a third location for communication with said first PLC device;

wherein the distance from said third location to said first location is less than the distance from said first location to said second location; and

wherein the distance from said third location to said second location is less than the distance from said first location to said second location.

2. The method of claim 1, further comprising coupling a fourth PLC device to the second power line conductor at a fourth location for communication with said first PLC device and wherein said fourth location is between said first location and said second location.

3. The method of claim 1, further comprising coupling a fourth PLC device to a third power line conductor at a fourth location for communication with said first PLC device and wherein said fourth location is between said first location and said second location.

4. The method of claim 1, wherein said third PLC device forms part of a data path bypassing a transformer.

5. The method of claim 1, wherein said first PLC device comprises a backhaul device.

6. The method of claim 1, wherein said first PLC device forms part of a data path between the second PLC device and the Internet.

7. The method of claim 1, wherein said first PLC device comprises a first modem.

8. The method of claim 7, wherein said first PLC device further comprises a router in communication with said first modem.

9. The method of claim 7, wherein said first PLC device further comprises a wireless transceiver in communication with said first modem.

10. The method of claim 7, wherein said first PLC device is configured to perform media access control processing.

11. The method of claim 1, wherein the first and second power line conductors carry different phases of a power signal.

12. The method of claim 1, wherein the first and second power line conductors carry voltages greater than one thousand volts.

13. The method of claim 1, wherein said first PLC device is coupled to the first conductor at said first location by attaching a coupler that couples via inductance at said first location.

14. The method of claim 13, wherein said coupler comprises a substantially toroidal shaped core disposed substantially around the entire circumference of the first conductor.

15. The method of claim 1, wherein said first PLC device is coupled to the first conductor at said first location by attaching a coupler that couples via capacitance at said first location.

16. The method of claim 1, wherein said third PLC device communicates with said second PLC device.

17. A power line communication (PLC) system for use with a first and second power line conductor, comprising:

a first PLC device coupled to the first power line conductor at a first location;

a second PLC device coupled to the first power line conductor at a second location and in communication with said first PLC device, at least in part, via the first power line conductor;

a third PLC device coupled to the second power line conductor at a third location and in communication with said first PLC device; and

wherein said third location is between said first location and said second location.

18. The system of claim 17, further comprising a fourth PLC device coupled to the second power line conductor between said first location and said second location and in communication with said first PLC device.

19. The system of claim 17, further comprising a fourth PLC device coupled to a third power line conductor between said first location and said second location and in communication with said first PLC device.

20. The system of claim 17, wherein said third PLC device forms part of a data path bypassing a transformer.

21. The system of claim 17, wherein said first PLC device comprises a backhaul device.

22. The system of claim 17, wherein said first PLC device forms part of a data path between the second PLC device and the Internet.

23. The system of claim 17, wherein said first PLC device comprises a first modem.

24. The system of claim 23, wherein said first PLC device further comprises a router in communication with said first modem.

25. The system of claim 23, wherein said first PLC device further comprises a wireless transceiver in communication with said first modem.

26. The system of claim 17, wherein said first PLC device is configured to perform media access control processing.

27. A method of communicatively coupling power line communication (PLC) devices to a first and second overhead power line conductor that travel in a substantially parallel physical arrangement and in spaced-apart relation, the method comprising:

coupling a first PLC device to the first power line conductor at a first location;

coupling a second PLC device to the first power line conductor at a second location for communication with said first PLC device, at least in part, via the first power line conductor;

coupling a third PLC device to the second power line conductor at a third location for communication with said first PLC device; and

wherein said third location is between said first location and said second location.

28. A method of communicating data between a first, second, and third PLC device in which the first and second PLC devices are coupled to a first overhead power line conductor and the third PLC device is coupled to a second overhead power line conductor and wherein the first and second overhead power

line conductors travel in a substantially parallel physical arrangement and in a spaced-apart relation, the method comprising:

- transmitting a first data signal along the first overhead conductor from the first PLC device;

- receiving the first data signal from the first overhead conductor at the second PLC device;

- transmitting a second data signal along the first overhead conductor from the first PLC device;

- receiving the second data signal from second overhead conductor at the third PLC device; and

- wherein the second data signal couples from the first overhead conductor to the second overhead conductor, at least in part, through the air.

29. A method of communicating data between a first and a second PLC device that are coupled to first and second overhead power line conductors, respectively, and wherein the first and second overhead power line conductors travel in a substantially parallel physical arrangement and in a spaced-apart relation, the method comprising:

- transmitting a first data signal device along the first overhead conductor from the first PLC;

- receiving the first data signal from second overhead conductor at the second PLC device; and

- wherein the first data signal couples from the first overhead conductor to the second overhead conductor, at least in part, through air.

30. The method of claim 29, further comprising:

transmitting a second data signal along the second overhead conductor from the second PLC device;

receiving the second data signal from the first overhead conductor at the first PLC device; and

wherein the second data signal couples from the second overhead conductor to the first overhead conductor, at least in part, through air.

31. The method of claim 29, wherein the data signal is comprised of at least one carrier at a frequency greater than one megahertz.

32. The method of claim 29, where in the data signal is comprised of at least one carrier at a frequency greater than four megahertz.

33. The method of claim 29, where in the data signal is comprised of at least one carrier at a frequency greater than twenty megahertz.

34. The method of claim 29, further comprising modulating and demodulating the first data signal at the third PLC device.

35. The method of claim 31, further comprising:
receiving the first data signal wherein the carrier is in a first frequency range;
converting the first frequency range of the first data signal to a second frequency range, wherein the first frequency range is different than the second frequency range.

36. The method of claim 35, wherein the first frequency range does not overlap with the second frequency range.

37. The method of claim 29, further comprising transmitting the first data signal on a low voltage power line at the second PLC device.

38. The method of claim 37, further comprising routing the first data signal at the second PLC device.

39. The method of claim 29, wherein said first data signal comprises power usage data.

40. The method of claim 29, wherein said first data signal comprises to voice data.

41. The method of claim 29, further comprising periodically measuring voltage on a low-voltage power line at the second PLC device.

42. The method of claim 29, further comprising performing media access control processing at the second PLC device.

43. A method of communicating a data signal on a overhead three-phase medium voltage electrical system that travel in a substantially parallel physical arrangement and in a spaced-apart relation, comprising:

transmitting said data signal on a first phase of the electrical system;

receiving said data signal on a second phase of the electrical system;

wherein said data signal is comprised of a carrier at a frequency of at least one megahertz; and

wherein said data signal couples between the first and second phases of the electrical system, at least in part, through the air.

44. The method of claim 43, further comprising receiving said data signal on a third phase of the electrical system, wherein the data signal couples between the first and third phases of the electrical system.

45. The method of claim 43, further comprising receiving said data signal on a third phase of the electrical system, wherein the data signal couples between the second and third phases of the electrical system.

46. The method of claim 43, wherein said data signal is comprised of carrier of at least twenty megahertz.